vaporization, compression, chemical separation, distillation, condensation, heating, and cooling.

26. The process of claim 24 wherein the flow path has a maximum dimension (height or width) of at most 5000 μm.

27. A process of making a device from a plurality of shims, passing a fluid through said device and conducting a unit operation on the fluid, comprising:

stacking a plurality of shims such that a continuous flow path is formed through the shims;

wherein the flow path is substantially parallel to shim thickness;

bonding the shims to form a device capable of performing a unit operation on a fluid;

wherein the unit operation is selected from the group consisting of distilling, reacting, adsorbing, heating, cooling, compressing, expanding, separating, absorbing, vaporizing, condensing, and combinations of these;

passing a fluid into the device such that the fluid passes through the flow path in said at least three shims; and

performing at least one unit operation on the fluid as it passes through the flow path in said at least three shims.

28. The process of claim 27 wherein the plurality of shims comprises at least three shims through which a flow path is formed and wherein a straight line can be drawn through the flow path in said at least three shims.

29. The process of claim 28 wherein the device is capable of at least two different unit operations.

30. The process of **29** wherein there is a second flow path adjacent to said flow path and wherein a heat transfer fluid flows through said second flow path.

31. The process of claim 29 wherein the at least two different unit operations comprise heat transfer and chemical reaction, and further wherein there combustion is occurring in said flow path and a steam reforming reaction is occurring in the second flow path.

32. A method of making a laminated device containing a component, comprising:

stacking at least four shims;

wherein each of said at least four shims comprises an aperture;

wherein the apertures in each of said at least four shims form a continuous flow path through each of said at least four shims;

wherein the aperture in each of said at least four shims is empty or is partially blocked by a mixing projection;

wherein a straight, unobstructed line is present through the continuous flow path or through the continuous flow path and mixing projections; and

bonding the at least four shims.

33. The method of claim 32 wherein the aperture in each of said at least four shims is empty and a static mixer is inserted into the aperture.

34. The method of claim 32 wherein the aperture in each of said at least four shims comprises a projection.

35. The method of claim 34 wherein the aperture comprises sides and wherein the projection extends from one side of the aperture to another side of the aperture.

36. The method of claim 33 wherein each of said at least four shims has an identical design.

37. A device formed by the method of claim 32.

38. A laminated device, comprising:

a first set of microchannels wherein each microchannel has an inlet and an outlet,

a header connected to the inlets of the first set of microchannels;

a footer connected to the outlets of the first set of microchannels; and

comprising a header or footer structure, wherein

the header has a surface that curves toward at least a portion of the inlets of the first set of microchannels, or

the footer has a surface that curves toward at least a portion of the outlets of the first set of microchannels, or

the footer comprises a roof, located on a side of the footer opposite the side that is connected to the outlets of the first set of microchannels, and the roof is sloped relative to the outlets of the first set of microchannels.

39. The device of claim 38 further comprising a second set of microchannels that are adjacent to and in thermal contact with the first set of microchannels.

40. The device of claim 39 wherein the device comprises a condenser or a vaporizer.

41. The device of claim 38 wherein

the header has a surface that curves toward at least a portion of the inlets of the first set of microchannels, or

the footer has a surface that curves toward at least a portion of the outlets of the first set of microchannels, and

further comprising a flow path that is adjacent to either the header or the footer, wherein the flow path is separated from the header or the footer by a curved wall that has one surface facing the microchannels and one surface that faces the flow path.

42. The device of claim 41 wherein both the header and the footer have a surface that curves toward the microchannels.

43. The device of claim 39 wherein the device is a component of a larger device.

44. The laminated device of claim 40, wherein the device comprises a vaporizer, wherein the footer comprises a roof, and the roof has at least two sides that converge to form an apex.

45. The device of claim 44 wherein the roof comprises multiple outlets.

46. The device of claim 39 formed by a method comprising stacking shims such that shim thickness is substantially parallel to fluid flow through the device, as flow will occur during normal operation of the device is in operation.

47. Apparatus for vaporizing water comprising:

an inlet leading to a first set of microchannels for a liquid to flow into;

a second set of microchannels for a fluid to flow through;